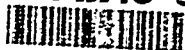


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ARI Research Note 92-09

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A Review of Hardware and Software Technology Included Within the Electronic Information Delivery System (EIDS)



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November 1991



91-18307



United States Army
Research Institute for the Behavioral and Social Sciences

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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0123	
1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS ---		
2a. SECURITY CLASSIFICATION AUTHORITY ---			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE ---			4. PERFORMING ORGANIZATION REPORT NUMBER(S) ---		
5. MONITORING ORGANIZATION REPORT NUMBER(S) ARI Research Note 92-09			6a. NAME OF PERFORMING ORGANIZATION B. Welle Memorial Institute Columbus Division		
6b. OFFICE SYMBOL (If applicable) ---			7a. NAME OF MONITORING ORGANIZATION U.S. Army Research Institute		
6c. ADDRESS (City, State, and ZIP Code) 505 King Avenue Columbus, OH 43201			7b. ADDRESS (City, State, and ZIP Code) P.O. Box 2086 Fort Benning, GA 31905-0686		
8a. NAME OF FUNDING/SPONSORING ORGANIZATION U.S. Army Research Institute for the Behavioral and Social Sciences			8b. OFFICE SYMBOL (If applicable) PERI-I		
8c. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600			9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DAAL03-86-D-0001		
10. SOURCE OF FUNDING NUMBERS			PROGRAM ELEMENT NO. 63007A		
PROJECT NO. 794			TASK NO. 3404		
WORK UNIT ACCESSION NO. H02			11. TITLE (Include Security Classification) A Review of Hardware and Software Technology Included Within the Electronic Information Delivery System (EIDS)		
12. PERSONAL AUTHOR(S) Yates, Jerrel K.					
13a. TYPE OF REPORT Final		13b. TIME COVERED FROM 91/06 TO 91/09		14. DATE OF REPORT (Year, Month, Day) 1991, November	
15. PACE COUNT 66					
16. SUPPLEMENTARY NOTATION This research note represents the culmination of the author's 3-month duty with the U.S. Army Research Institute for the Behavioral and Social Sciences, Fort Benning Field Unit. Dr. Yates' position was established under (Continued)					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD			EIDS CBT Distributed training		
GROUP			EIDS ASSIST CBI		
SUB-GROUP			Interactive videodisc CAI		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) For this report, the Electronic Information Delivery System (EIDS) hardware and its associated software, Authoring Software Systems of Interactive Simulation and Training (ASSIST), were examined. The purpose of the examination was to produce EIDS supplementary documentation with the associated EIDS storybook records. EIDS, with its integral video-disc player and branching capacity, is a medium capable of presenting learning tasks that span the continuum--from concrete to abstract. However, the EIDS ASSIST does not provide complete examples or program demonstrations. Without additional assistance, the user's initial experience with EIDS is cumbersome at best. Current documentation needs complete examples (paper and program) that include the full complement of media and programming functions available. The examples should demonstrate the production of tests that include fill-in-the-blank and multiple-choice questions and questions with several correct responses. A thoroughly tested example with feedback will provide the user with an experience of the interactive capabilities of EIDS. The two products in appendixes A and B provide a (Continued)					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL Seward Smith			22b. TELEPHONE (Include Area Code) (404) 545-5589		
22c. OFFICE SYMBOL PERI-IJ					

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16. SUPPLEMENTARY NOTATION (Continued)

the Summer Associate in the Summer Faculty Research & Engineering Program (SFREP). Dr. Yates has been teaching in the field of computer science for the past 15 years and is currently with Columbus College Department of Computer Sciences. He has a special interest in the areas of programming languages and compiler construction. His computer science background made him a good candidate to evaluate the use of the Army's computer training technology, Electronic Information Delivery System (EIDS), for implementing training products in support of the ARI Field Unit's major research task, Light (Infantry) Forces Training and Performance Measurement.

19. ABSTRACT (Continued)

systematic exploration of the EIDS technology and will serve as an introduction to EIDS ASSIST programming language.

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A REVIEW OF HARDWARE AND SOFTWARE TECHNOLOGY INCLUDED WITHIN THE
ELECTRONIC INFORMATION DELIVERY SYSTEM (EIDS)

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A REVIEW OF HARDWARE AND SOFTWARE TECHNOLOGY INCLUDED WITHIN THE ELECTRONIC INFORMATION DELIVERY SYSTEM (EIDS)

Introduction

Purpose

The purpose of this research was to produce documented procedures (two complete examples that can be executed on the Electronic Information Delivery System (EIDS) terminal) designed to be used in conjunction with the EIDS Authoring Software System of Interactive Simulation and Training (ASSIST). These procedures will permit the researcher with limited computer experience to rapidly gain a working knowledge of the EIDS functions and interactive teaching capabilities. This research note also serves as an introduction to the system manual produced by Computer Sciences Corporation (CSC) for the Armywide Training Support Command (ATSC), EIDS ASSIST Manual Ver 2.2 (CSC, 1989). The lack of a complete example in the documentation can be very frustrating to the novice. With this in mind, the first program (found in Appendix A) illustrates a few components of the EIDS ASSIST software but shows the novice a complete program involving fundamental concepts. The second example (found in Appendix B) is more sophisticated and may require the user to refer frequently to the manual. In the second example the interaction between the videodisc, graphics, text, and the user is developed.

This research note was produced to assist the researcher in making a more informed decision when pursuing not only EIDS, but the technology in general, as a solution to research issues in distributed training. To use the full capacity of EIDS and ASSIST requires a thorough study of the complete system manual (CSC, 1989).

Method

EIDS ASSIST Overview

The EIDS system was designed to take advantage of current state of the art computer hardware and software. The combination of videodisc with audio and overlaid graphics presents a wide array of teaching interactions to the course designer. The complete system is interactive and supports branching, which permits designers to implement required reviewing (based on performance) as well as student initiated review (based on student perceptions). The EIDS ASSIST Manual presents all phases of the courseware design process in three primary stages: I (development), II (production), and III (authoring). Each step in these three stages is supported by a record referred to in common Computer Based Training (CBT) terminology as a Storyboard record. The Storyboard record has a very specific format requiring accurate completion of details. Appendixes A and B provide detailed information of the Storyboard construction process.

Since the EIDS hardware is usually equipped with a lightpen and number pad, the courseware developer should specify those devices as the primary input devices and have them available while learning the system. Some of the explanations in the manual will not make sense unless the developer has access to a lightpen. Many of the explanations will also be unclear if the developer does not have access to a mastered videodisc. The content of the videodisc does not matter, but the developer who is learning the system needs to be able

to interact with the videodisc system. The videodisc plays a major role in EIDS by providing a more sophisticated level of interaction than computer based instruction alone.

Approach

Many developers of authoring systems claim that their product is very easy to use. Courseware authors beg to differ (Fritz, 1991). A very simple EIDS and EIDS ASSIST lesson has to incorporate most of the concepts described in the EIDS manual. However, the number of different stages and steps applicable at each stage within a lesson is overwhelming. The structures and sub structures become complex. One solution to the complexity issue used in programming languages is to present complex languages in terms of subsets, an orthogonal approach. In an orthogonal approach the elements of the language subset must be independent of the elements left out. This is very difficult within EIDS due to the enigmatic interdependency among the parts.

To reduce the EIDS introduction to a more manageable subset of instructions, the first 15 chapters of the manual were read to obtain an overview of the capabilities of the software. The EIDS ASSIST software was then used to write a very simple lesson. The manual contains fragments of courseware programs at the end of chapter nine which were helpful in understanding some of the steps necessary, for completing the first lesson.

Results

Menu Demonstration Example

For this first example, EIDS ASSIST Stages I (development) and II (production) were omitted using only Stage III (authoring). Out of the Program Functions available for Stage III Storyboard records, only the menu (MU) and page of text (PT) functions were included. The "lesson" consists of showing the end-user a screen displaying a lightpen activated menu with two options:

Option 1
Exit

If the end-user selects option 1 using the light pen, then a second screen is shown indicating that the end-user chose the first option. If the end-user chooses the second option, then the program terminates and the DOS prompt is seen next.

The "real lesson" is how to create a complete program using the selected Program Functions, e.g., menu (MU) and page of text (PT). The Menu Demonstration Example (Appendix A) describes the step by step creation of a basic menu program.

Three important interactions are shown for the menu Program Function. There must be a connection made between the end-user and an option seen on the screen. This connection (link) is labelled Link 1 in Figure 1 shown below. This link is established by displaying the options on the screen using the

page of text and instructing the end-user to touch the appropriate option with the lightpen. This links the end-user to an option on the screen. However, that does not link the option to the program.

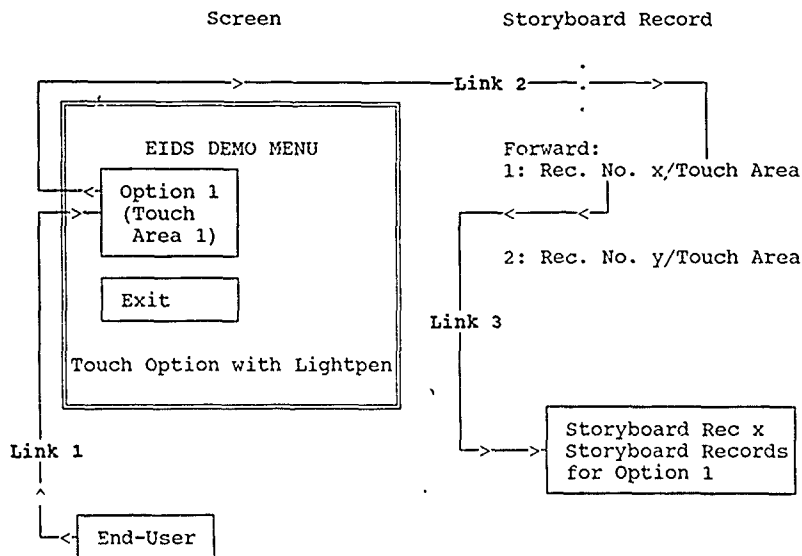


Figure 1 Program Function Interactions

The second link is between the menu option on the screen and the active area which the end-user touches. This link is illustrated for menu Option 1 and Touch Area 1 in Figure 1. The specific formats for the record number and the touch area are described in Appendix A. The touch area on the screen is a rectangle. This touch area is specified in the storyboard record as screen coordinates. The active area which the end-user touched on the screen is linked in this manner to a specific field of the storyboard record (the same storyboard record which is displaying the page of text). Three steps are used to create this link. First, the lightpen is specified as the input device in the storyboard record. Second, MU is specified as one of the Program Functions. In the third step the courseware designer must associate each menu option appearing on the screen with an active area.

The third link is between the option which the student touched and the storyboard record which begins the execution of that option. In Figure 1 Option 1 was linked to the storyboard field 1 (under the forward field) by Link 2. Link 3 in Figure 1 associates field 1 with record number x (shown as

Rec. No. x). Following the links, the end-user is connected to the storyboard records which will execute Option 1. Appendix A contains a detailed explanation of the example through reproductions of the storyboards and output screens.

Video Graphics Example

At Appendix B is the Video Graphics Example which builds on knowledge and experiences gained from the interaction with the Menu Demonstration Example. The following Stage III Program Functions are included:

- o CT (computer text) is text incorporated within the program which explains and/or questions the end-user.
- o LS (link subroutine) provides direct linkage between subroutines without end-user input.
- o GI (graphic illustration) function permits an externally produced graphic to be imported and integrated within an interactive videodisc program.
- o KB (knob turn --> videodisc) allows the end-user to move through a videodisc frame by frame.
- o IM (interrupt motion --> videodisc) allows the end-user to stop a videodisc at any time by touching the lightpen to any portion of the screen.

Video Graphics Example introduces three designer choices: disc use, F1 key, and F2 key. The purpose of the disc use (DU) choice function is to give the student introductory information concerning the content and use of the interactive videodisc. The F1 and F2 key designer choices provide the end-user access to special information or help. However, the courseware designers may use those functions however they choose. Hence, designer choice is a very good name. The author has included all the details which are necessary for implementing the three designer choice functions:

- o DU (disc use) choice which activates the videodisc.
- o F1 (F1 key)
- o F2 (F2 key)

Using the additional program functions with the designer choices, the Video Graphics Example was designed to demonstrate to the end-user the built in active areas for lightpen use. Graphics are introduced presenting examples of both text and graphics over video. This example also introduces the courseware designer to the concept of the subroutine, one of the most important concepts in software engineering.

This example was kept simple in terms of the number of Program Functions used but still illustrates many of the major features of the EIDS ASSIST software and the EIDS hardware. Appendix B provides a more detailed description of this example.

Discussion

Pros and Cons of EIDS/EIDS ASSIST

Writing software for authoring tools and authoring languages for multimedia is a complex and very difficult task. EIDS ASSIST has the following strengths:

- o Incorporates multimedia into the training process
- o Can be highly interactive
- o Complex concepts may be presented

The following items represent areas of the EIDS ASSIST software which could be improved:

- o Lack of examples
- o Manual is hard for computer novice to read
- o Error messages flash upon the screen too quickly for the end-user to see them
- o It is difficult to locate topics using the index
- o Some of the prompt screens are too time consuming

The EIDS ASSIST Manual needs improvement in several areas. First, there should be a complete example of a simple lesson which involves most of the different media and programming functions (PFs). This example should include a practice test followed by an actual test. The test question structure needs to include the full range of response patterns available, e.g., fill in the blank, multiple choice, and questions with several correct answers. The full complement of response patterns will permit the end-user to gain a more thorough knowledge of the capabilities of the software and hardware.

The EIDS ASSIST is not well suited for Computer Assisted Instruction (CAI). The screens require an excessive amount of the courseware designers' time and consume large amounts of memory. These two factors alone would limit the use of EIDS ASSIST for CAI.

Other problems appear. If it takes an extra fifteen seconds to enter one screen, then the time lost is minor. But if that same time is considered for thousands of screens and thousands of users, then the time loss becomes

significant. Some of the automatic prompts require that the cursor be moved completely across the screen in order to respond to a question. It will not allow the user to simply respond with a "Y". Some of the program functions need additional information which must be provided in a field called PFAMP (Program Amplification). There is an option which will generate automatic prompts for the information required in the PFAMP field. Some of the automatic prompts for the PFAMPs require placement of the cursor on the screen but neglect to let the user know the current row/column location of the cursor.

One thing that would be helpful for the end-user is a status bar at the bottom of the screen. This status bar could deliver information such as which options are currently active. The designers of the EIDS ASSIST software may have considered this and dropped it because this status line would cover part of the video.

Several software developers offer demonstration disks for their products. An investigation of those suitable for the EIDS equipment would seem worthwhile. Instruction Delivery Systems magazine offers a Directory of Authoring Systems (1991) in their Biennial Guide.

Conclusions

Software engineers consider the 80's the decade of Structured Programming. The 90's are already being called the decade of Object Oriented Programming (OOPS). Some software developers are already using C++ to develop authoring tools (Gery, 1990). The reusability and extensibility of objects make them an ideal software development tool. CBT course designers appear to frequently use flowcharts to represent program logic. In the 70's software engineers dropped flowcharts, a major tool for program design, and adopted the now standard top down approach in which the final objective becomes the starting point. A continuing controversy is appropriateness of the use of the "goto" statement in programming languages. The consensus is that the use of the "goto" should be severely curtailed if not completely eliminated. The EIDS ASSIST software requires the equivalent of a goto or conditional goto statement be used in almost every storyboard record. If the courseware designer is not careful, the program's flowchart soon becomes convoluted, resembling a spaghetti like structure. The program will be difficult for anyone to follow, locate errors, or make modifications later.

A programmer or software engineer should always be a member of a team which develops interactive videodisc software. See Becker (1991) for a complete discussion of skills the team should have: job task analysis, instructional design, storyboard and script development, graphic arts, film and video production, systems engineering, and software engineering and programming.

EIDS hardware represents current multimedia technology. The developers of authoring systems software have an almost impossible task. There are two conflicting design requirements. The software must be very user friendly but must perform tasks normally relegated to higher level programming languages.

An authoring system which requires that users learn programming skills should not be touted as a system for novices. The EIDS ASSIST requires that users attain medium level programming skills. We do not recommend the EIDS ASSIST for the novice.

The future of authoring systems software is unlimited. Faster machines mean more graphics capability including animation. The amount of mass storage will continue to increase. CD ROM is becoming popular (inexpensive). Hand-held scanners are now economical. There are numerous authoring systems which will run on the EIDS equipment (Directory of Authoring Systems, 1991). Several of those authoring systems incorporate current technology such as CD ROM, videodiscs, and scanners. Some of those authoring systems are designed to operate at two levels: (1) a novice level and (2) an expert level. EIDS ASSIST is one solution to the problem of incorporating interactive videodiscs into courseware. There are other solutions which will run on EIDS and those solutions should be investigated. The courseware designers will be limited only by their imagination.

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Appendix A

Menu Demonstration Example

Introduction

This demonstration illustrates: (1) the MU [menu] program function, (2) the PT [Page of Text] program function, and (3) active touch areas for 80 column screens. It is assumed that the courseware developer has access to the EIDS ASSIST Manual Ver 2.2. We will try to cover all the steps necessary for completion of the program.

Terminology

First, we need some terminology. Things can be confusing because we must talk about two programs: (1) the EIDS ASSIST program which the courseware developer is using and (2) the courseware program which the end-user (student) will be using. The program which the developer is writing will be called a courseware program. The program the courseware developer is using is the EIDS ASSIST program. The courseware developer is a "user" of the EIDS ASSIST program. There are also two users: the courseware developer and the student. We will use the terms user and courseware developer interchangeably. End-user will refer only to a user of the final product (courseware program).

EIDS ASSIST PROGRAM MENU		VERSION 2.2.1 NOVEMBER 1989
1. DESIGN	- DESIGN GENERATOR	
2. DOS UTILITIES	- VARIOUS DOS UTILITIES	
3. STORYBOARDS	- STAGE I, II, III, SHOT/EDIT LISTS	
4. UTILITIES	- VARIOUS UTILITIES	
5. GENIE	- GENERIC DRIVER SOFTWARE	
6. CONVERSION	- CREATE INTERACTIVE DATA	
7. MAKE GENIE DISK	- CREATE GENIE FLOPPY DISK	
8. MAKE CHI DISK	- CREATE INSTRUCTOR'S CHI DISK	
9. CONFIGURATION	- CONFIGURE SOFTWARE TO MATCH HARDWARE	
A. INTERACTIVE DISK	- CREATE INTERACTIVE DISK	
0. EXIT	- EXIT TO THE OPERATING SYSTEM	
SELECT OPTION:3		

Figure 1

Perform the following action now: type 3 and press enter to obtain the screen shown in Figure 2 below.

EIDS ASSIST Program Screens

The EIDS terminal is configured to run the EIDS ASSIST program when the machine is turned on. The first screen requiring user input is given above as Figure 1. The user types 3 and <enter>. Most of the EIDS ASSIST menus require that the user hit enter for the selection to be implemented. Whenever possible the user's entries have been highlighted in *italic*. Also, <Enter> means press the enter or return key.

The screen seen in Figure 2 below asks for the directory which contains your program. The directory name must be eight characters or less. We chose the name MenuDemo. If this subdirectory does not exist, assist will let you know and will ask whether you want to create this subdirectory. Respond with a yes the first time.

Perform the following actions now:

1. Type *menudemo*<Enter>.
2. Type *y* (no <Enter> required) only when the directory is created.

EIDS ASSIST STORYBOARDS PC AT/XT Environment Version 2.2.1
Which subdirectory will contain your data files: <i>MenuDemo</i>

Figure 2

Select option 3 from the screen shown below in Figure 3. We are skipping Stage I and Stage II in this sample demonstration.

Perform the following action now: type 3<Enter> to obtain Figure 3 below.

<div style="text-align: center;"> EIDS ASSIST STORYBOARDS MAIN MENU </div>	DATE: 07/23/91
<div style="text-align: center;"> 0. RETURN TO PROGRAM MENU 1. STAGE I - DEVELOPMENT 2. STAGE II - PRODUCTION 3. STAGE III - AUTHORIZING 4. SHOT LIST 5. EDIT LIST </div>	
SELECT OPTION :3	

Figure 3

The next screen, shown in Figure 4 below, will be skipped after the initial Stage III records have been created. If Stages I or II had been completed, then those records would have been converted to Stage III record format. Since we skipped Stages I and II, the EIDS ASSIST program has to create some empty files.

<div style="text-align: center;"> EIDS ASSIST STAGE III - AUTHORIZING </div>	DATE: 07/23/91
<div style="text-align: center;"> 0. RETURN TO MAIN MENU 1. TRANSFORM STAGE II FILES INTO STAGE III FILES 2. CREATE EMPTY STAGE III FILES </div> NO STAGE III FILES PRESENT	
SELECT OPTION :2	

Figure 4

Perform the following action now: type 2<Enter> (Figure 4 will not appear unless this is your first time) to obtain the screen seen in Figure 5 below.

<div style="text-align: center;"> EIDS ASSIST DATE: 07/23/91 STAGE III - AUTHORIZING </div>
<div style="text-align: center;"> 0. RETURN TO MAIN MENU 1. ADD RECORDS TO DATABASE 2. DISPLAY/EDIT/DUPLICATE RECORDS 3. PRINT REPORTS 4. SET PROGRAM - LINKED FUNCTIONS 5. ADJUST FRAME NUMBERS 6. LIST RECORD IDS 7. CREATE FRAME NUMBERS FROM PREMASTER SMPTE 8. PREVIEW STORYBOARDS </div>
SELECT OPTION :1

Figure 5

Stage III Storyboard Records

We are now ready to add Storyboard Stage III records. From the screen, shown in Figure 5 above, we will select the ADD RECORDS TO DATABASE option.

Perform the following action now: type 1<Enter> to obtain the screen shown in Figure 6 below.

The screen below (Figure 6) shows the record format for Stage III records.

STAGE-III AUTHORIZING		ADD	DATE	07/23/91
RECORD ID:	10	SG:		
FRAME 1:		FRAME 2:		
PRE MASTER SMPTE 1:	: : :	PRE MASTER SMPTE 2:	: : :	
FORWARD:		DEVICE 1: LP 2:		
1:		5:		
2:		6:		
3:		7:		
4:		8:		
PF1: MJ	PF1 AMP:	40/80: 80		
PF2: PT	PF2 AMP:			
PF3:	PF3 AMP:			
PF4:	PF4 AMP:			
C:				
N:				
SOURCE REF:		BEG END :		
PROC NAME:		PROC TYPE:		

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 6

Menu and Page of Text Functions

The cursor will be initially located at the RECORD ID field. Use the down arrow (↓) or enter key several times to move the cursor around. To get more information about moving the cursor around, press the F9 key.

The courseware developer must decide what the end-user is to see first and design the courseware program to fit those requirements. We want our first screen to be a simple menu. We will need to complete a Page of Text (PT program function) first. We need to enter MU in the PF1 (Program Function 1) field to specify that this is a menu record. We enter PT in the PF2 (Program Function 2) to specify the Page of Text program function.

Each ASSIST courseware program resembles a BASIC (Beginners All purpose Symbolic Instructional Code) program. Each record in the courseware program loosely corresponds to a line in a BASIC program. The FORWARD field of the record indicates the next courseware record to be executed. Some records allow multiple branches. That is, the next record to be executed depends upon the response made by the end-user. A menu (MU) record is one which allows multiple branches. The courseware program is also interpreted like BASIC. The program used to interpret the courseware program is called GENIE (Generic Software).

GOTO/FORWARD Fields

We show the completed record 10 shown below in Figure 7, but do not complete the record yet. We will first give an overview of each completed field and how it affects the courseware program at execution time. Later, we will show the details for completing the record. In order to understand how the MU (menu) program function works, we must understand the connections between the Page of Text, screen active areas and GOTO fields (the eight fields under the FORWARD field in the Stage III record). The E S ASSIST Manual refers to these fields as Stage III response fields [IV-8 and IV-15-9].

Use the up/down arrows to move the cursor from field to field. Perform the following actions now.

1. Type 100<Enter> in field 1 under the FORWARD field.
2. Type 200<Enter> in field 2 under the FORWARD field.
3. Type KB<Enter> in the Device 2 field.
4. Type MU<Enter> in the PF1 field.
5. Type PT<Enter> in the PF2 field.
6. Type PAGE OF TEXT MUST BE DONE BEFORE E)NTER COORDINATES<Enter> in the C: field.
7. Type MENU DEMO<Enter> in the PROC NAME field.

STAGE-III AUTHORIZING		DATE 07/24/91
<hr/>		
RECORD ID: 10	SG:	
FRAME 1: 0		FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00:00		PRE MASTER SMPTE 2: 00:00:00:00
FORWARD:		DEVICE 1. LP 2: KB
1: 100/01056006	5:	
2: 200/01076008	6:	
3:	7:	
4:	8:	
PF1: MU	PF1 AMP:	40/80: 80
PF2: PT	PF2 AMP: #10/	
PF3:	PF3 AMP:	
PF4:	PF4 AMP:	
C:PAGE OF TEXT MUST BE DONE BEFORE E)NTER COORDINATES		
N:		
SOURCE REF:		BEG END :
PROC NAME: MENU DEMO		PROC TYPE:
<hr/>		

F1 - Record Options F9 - General Help F10 - Specific Help English
 STAGE-III AUTHORIZING DATE 07/24/91

Figure 7

The entry in the GOTO field above has the format: record #/XXYYxxyy. For example, GOTO field 1 has the entry: 100/01056006. The record number is 100 and specifies that at execution time (when this courseware is executed), record 100 will be executed next provided the touch area specified by 01056006 has been touched by the end-user. There are two ways to enter the coordinates for a touch area: type in the string of digits for the coordinates or use the record option E)nter Coordinates. We will use the E)nter Coordinates method first. This will help the beginner understand touch areas better. The touch area 01056006 is seen better as XX=01 (Column 2), YY=05 (Row 6), xx=60 (Column 61) and yy=06 (Row 7). XXYY = 0105, specifies the upper left corner of a touch area. Also, xxyy=6006 specifies the lower right hand corner of a touch area. The touch area defined for this GOTO field is Rows 6 and 7, columns 2 through 61. There is no reason for the end-user to touch this area. That is, the EIDS ASSIST software will not automatically generate a screen to go with your menu. This is what you must accomplish in your Page of Text file. The PT (Page of Text) program function will show one screen of text. The details

for entering the text will be given later. The software developer must place in row 1 or row 2 something which will make the user want to touch this area. The 100/01056006 entry associates the touch area 01056006 with record number 100. The courseware developer determines what the end-user will see on the screen. The courseware developer can use a Page of Text to display a menu or a video still could be used. This demonstration uses a Page of Text.

Online Help Screens

For our menu we want a header at the top of the page and two lines describing the choices the end-user has. We need mechanisms: (1) for displaying the choices, (2) for connecting the choice made by the end-user to a record number in our courseware program. The MU program function is used to make the record a menu record. If we place the cursor over the "M" or "U" of the PF1 entry "MU" and hit the F10 key on our keyboard, we get specific help for the ASSIST MU program function. This type of help screen is called context sensitive, since it depends upon the cursor location and the value of the word under the cursor. This type of interactive help is very useful. We can also obtain context sensitive help for the program function PT. Those help screens are reproduced below as Figures 8-12.

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MU - MENU

RECORD
FRAME 1
PRE MAS
FORWARD
1:
2:
3:
4:

Designer can identify each Menu record so that the last seen menu can be accessed by the user when accessing the program-linked function for Menu.

Required field Entries:
All Stages -
ENTER.

Press <— to Return More... 1

PF1: MU
PF2: PT PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: PAGE OF TEXT MUST BE DONE BEFORE ENTER COORDINATES
N:

SOURCE REF: BEG END :
PROC NAME: PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 8

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Responses in 1-8

RECORD
FRAME 1
PRE MAS

FORWARD
1:
2:
3:
4: More...I Press <-J to Return

PF1: MU
PF2: PT PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: PAGE OF TEXT MUST BE DONE BEFORE ENTER COORDINATES
N:

SOURCE REF: BEG END :
PROC NAME: PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 9

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PT - PAGE OF TEXT

Designer can identify records which call for computer-generated text that is longer than 2 lines or placed at various locations on the screen or with simple graphic boxes. 40 column mode allows up to 23 lines of 40 characters each. 80 column mode allows up to 24 lines of 80 characters each.

Press <-J to Return More...I

RECORD
FRAME 1
PRE MAS

FORWARD
1:
2:
3:
4:

PF1: MU
PF2: PT PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: PAGE OF TEXT MUST BE DONE BEFORE ENTER COORDINATES
N:

SOURCE REF: BEG END :
PROC NAME: PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 10

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A Page of Text file may be accessed from more than one record.

CAUTION: If you revise a Page of Text file for a subsequent record, it will change the original Page of Text file.

NOTE: The PT file is a full page text editor.
 For details of editing, access the specific
 More...? Press <J> to Return More...?

PF1: MU

PF2: PT PF2 AMP:

PF3: PF3 AMP:

PF4: PF4 AMP:

C: PAGE OF TEXT MUST BE DONE BEFORE E)NTER COORDIN;TES

N:

SOURCE REF:

PROC NAME:

BEG END :

PROC TYPE:

Figure 11

```

25/91
HELP screen in the PT file.

RECORD
FRAME 1
PRE MAS
Required Field Entries:
Stage III -
Enter the PT File-Text.

FORWARD
1:
2:
3:
4:
More...I Press <-J to Return

PF1: MJ
PF2: PT PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: PAGE OF TEXT MUST BE DONE BEFORE E)NTER COORDINATES
N:

SOURCE REF:
PROC NAME:

SEG END :
PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

```

Figure 12

The record numbers in the GOTO fields represent the location of the next record to be interpreted provided some condition has been met. For a menu using a keyboard as the input device, the end-user would type the number corresponding to the GOTO field number. For example, for keyboard input, the end-user would select 1 to choose record 100 and select 2 to choose record 200.

Record Options

To create a Page of Text file we must select record options (F1 key -- see bottom of screen shown in Figure 13 below). This gives us a different menu at the bottom of the screen. There is more on line help available.

```
STAGE-III AUTHORIZING      DATE 07/23/91

RECORD ID. 10      SG:
FRAME 1: 0      FRAME 2: 0
PRE MASTER SMPTE 1: 00 00:00:00      PRE MASTER SMPTE 2: 00:00:00:00

FORWARD:      DEVICE 1: LP 2:
1: 100      5:
2: 200      6:
3:      7:
4:      8:

PF1: MJ      PF1 AMP:      40/80: 80
PF2: PT      PF2 AMP:
PF3:      PF3 AMP:
PF4:      PF4 AMP:

C: PAGE OF TEXT MUST BE DONE BEFORE ENTER COORDINATES
N:

SOURCE REF:      BEG END :
PROC NAME:      PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
                L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit
```

Figure 13

Perform the following actions now:

1. Press F1 key to obtain the screen shown in Figure 13 above.
2. Select F)ile to create Page of Text file.

Page of Text Status Line

The Page of Text edit screen is a blank screen except for the status line at the bottom of the screen. The status line is reproduced below.

Row 0 Col 0 Lm 0 Rm 79 Rec# 10 X F9-HELP ENGLISH

The status line above shows the cursor to be in the upper left corner of the screen. This Page of Text file is for record number 10. F9 will produce a help screen. The language is English. It is not clear what Lm 0 Rm 79 indicates but it probably indicates that this is an 80 column screen and the columns are 0 through 79. Lm is probably an abbreviation for Left margin and Rm is probably an abbreviation for Right margin. Three of those four help screens which are available are reproduced below as Figures 14 - 16. The fourth help screen available shows how to enter graphic characters such as box characters, right arrow, etc.

Page of Text Help Screens

Main Function Key Settings	
Key	Normal
F1	- End the Edit Process
F2	- Center Text on Current Line
F3	- Change Left Margin Full Page
F4	- Change Right Margin Full Page
F5	- Left Justify Current Line
F6	- Right Justify Current Line
F7	- Insert Line above Cursor
F8	- Delete Line at Cursor
F9	- This help screen
F10	- Clear to End of Line
More 1	

Figure 14

Main Function Key Settings	
Key	CTRL
F1	- Graphics Mode toggle
F2	- Change Text Color default
F3	- Block Inverse
F4	-
F5	- Block Blink
F6	- Block Unblink
F7	- Block Bold
F8	- Block Unbold
F9	- Define a Box
F10	- Change Border color
←	- Move one word left or right
More 1	More 1

Figure 15

Main Function Key Settings	
Key	ALT
F2	- Foreign Languages
F3	- Inverse mode toggle
F5	- Blink mode toggle
F7	- Bold mode toggle
F9	- Set Text Block Color
INSERT	insert toggle
HOME	move to left margin(normal) top left margin (CTRL)
END	move to end of data line (normal) move to bottom right margin (CTRL)
DEL	Delete char at cursor
Return	Go to begin of next line
- Move one char or line	
More	More

Figure 16

Perform the following actions now only if you want to view the screens shown in Figures 14-16 above:

1. *Press F9 key to obtain Figure 14 above.*
2. *Press | to obtain Figure 15 above, etc.*
3. *Press Esc key to return to the Page of Text editor.*

Input Device

The courseware developer should have screen layout forms to design their screens. A screen layout form is a grid with 25 rows and 80 columns. The courseware developer should decide what device the end-user will be using for input. The software is designed to be used with the lightpen as the primary input device. If this software is to be used to develop programs, then a lightpen should be used as the primary input device and the keyboard probably should be chosen as a secondary input device. For our demonstration program, the lightpen will be the primary input device. It is probably a good idea to select the keyboard as the secondary input device.

Page of Text Boxes

In our Page of Text, we center a title line for our sample demonstration program (courseware program). We also want the title line placed in a brightly colored box.

To define a box:

1. Control F9 (follow prompts).
2. You are prompted for the upper left corner of the box.
3. You are prompted for the lower right corner of the box.
4. You are prompted for background color of the box.

If you want the text color to be differ from the default color, you may define a block for a new text color. Use ALT F9 and follow the prompts which are similar to the ones for defining a box.

The actual menu is two lines placed anywhere the courseware developer desires. We reproduce the Page of Text below as Figure 17. The red color is not reproduced but is simulated by shading.

EIDS Menu Demonstration

Option 1

Exit

Touch Screen to Activate Option

Back Up

Last Dec

Acc Opt

Forward

Figure 17

When the end-user sees the above screen shown in Figure 17, the shaded areas are colored red. The Page of Text is not reproduced exactly, but the reproduction is very close.

Perform the following actions now:

1. *Create a Page of Text similar to the one given in Figure 17 above. Leave plenty of space between the line with "Option 1" and the line with "Exit". You will see the reason for this later.*
2. *Press F1 key to exit Page of Text editor.*
3. *Type S in response to the next prompt to save Page of Text file.*

We may also use one of ASSIST's utility programs to print all our Page of Text files. The default name for a Page of Text file is #record no. Record No. is the number of record when the courseware developer created the Page of Text file. This name can be overridden by the courseware developer and the same Page of Text file may be used with more than one record. Once we are satisfied with the Page of Text file we exit from the Page of Text editor (F1 key). As indicated above, we exit Page of Text by pressing the F1 key and then typing S for save when prompted.

Menu/Active Area Links

The MU program function does several things for the courseware developer. It allows the courseware developer to display a menu of options and lets the end-user transfer to any of those options. We will assume for this demonstration that a lightpen is the primary input device. For a lightpen, we link record numbers to menu options via active areas. There are four default active areas already defined by ASSIST. The courseware developer must be sure that any new active area either misses these default areas or completely covers them.

A touch area (or any rectangular area on a screen) is given by the coordinates of its upper left corner and the coordinates of its lower right corner. We usually express this by XYYxxyy, where 00 <= XX <= 79, 00 <= YY <= 24 and likewise for xx yy. The standard default touch areas for the 80 column screen are:

- | | | |
|----|----------------|----------|
| a. | Backup | 04201424 |
| b. | Last Decision | 24203424 |
| c. | Access Options | 46205624 |
| d. | Forward | 64207424 |

In our completed Page of Text, we have high lighted and labelled the standard active areas. These areas are active whether they are labelled or not. The labels describe the function of the given active area. The Forward touch area is inactive if the Forward field is blank.

After we complete the Page of Text, we are ready to define the active areas for the menu choices. There are only two (Option 1 and Exit), so it is easy. An active area is defined by specifying an upper left corner and a lower right corner. If we know that XYY is the upper left corner and xxyy is the lower right corner of the desired active area we may enter this information into the goto field using the following format:

Forward:

1:100/01056006

- Specific Example

2:nnnnnn/XXYYxxyy

- General Format

In the general format, nnnnn represents a record number which is to be executed if the associated active area (XXYYxxyy) is touched by the end-user. Where XX and xx are column coordinates and range from 00 to 79, YY and yy are row coordinates and vary from 00 to 24. Two digits must be used to specify a row or column. For example, we could specify an active area for our first menu option as follows:100/01056006. Recall that 100 gives the record number which will be executed next. The 01056006 specifies a rectangular active area. The upper left corner is 0105 (column 2, row 6) and the lower right corner is 6006 (column 61, row 7). If we do not know the exact locations of the desired active areas, then we may select E)nter Coords from the record options. Use the E)nter Coords option for this example. The initial screen is given below as Figure 18. [The other screen would not print legibly.]

Enter Coordinates Screen

The Enter Coordinates input device is: Keyboard

Devices available are:

1)Lightpen 2)Touchscreen 3)Joystick
4)Trackball 5)Mouse 6)Keyboard

Enter new device number or 0 to continue:0

Figure 18

Note that the Keyboard is the default device for the user to enter coordinate information. If the courseware developer desires to use one of the other devices, then the appropriate device number should be entered.

After the new device number or 0 is entered, ASSIST will first prompt the user for a response number. This response number refers to one of the eight GOTO fields. After a response number is entered, ASSIST will prompt the user for the upper left corner and then the lower right corner. The user specifies a corner by moving the cursor to the location or touching the location depending upon the input device specified for "Enter Coordinates" (It does not depend on the device the end-user will be using, since it is assumed that the end-user will be using a lightpen). The courseware developer may specify an active area for each non empty GOTO field. Once an active area is specified, ASSIST surrounds the area with a box and labels the box with the response number. However, only those non blank GOTO fields which contain legal record numbers (integers between 1 and 99999) will be accepted. If the user is not happy with the box alignments, then the coordinates of the active area may be changed from the Storyboard record screen. R)evise will place the courseware developer back into the Storyboard record. We may define the active areas for Option 1 and Exit now. Once the active areas are defined,

the Storyboard (record number 10) should resemble the one shown below in Figure 19.

Perform the following actions now:

1. If the record options menu is not present, then press F1 key.
2. Type E to select E)nter Coords option.
3. Type 0<Enter> .
4. Type 1<Enter> (now follow prompts to define an active area for Option 1).
5. Type 2<Enter> (now follow prompts to define an active area for Exit).
6. Type 0<Enter> to exit E)nter Coords option.

STAGE-III AUTHORIZING		DATE 07/29/91
RECORD ID: 10	SG:	
FRAME 1: 0	FRAME 2: 0	
PRE MASTER SMPTE 1: 00:00:00:00	PRE MASTER SMPTE 2: 00:00:00:00	
FORWARD:		DEVICE 1: LP 2: KB
1: 100/01056006	5:	
2: 200/01076008	6:	
3:	7:	
4:	8:	
PF1: MJ	PF1 AMP:	40/80: 90
PF2: PT	PF2 AMP: #10/	
PF3:	PF3 AMP:	
PF4:	PF4 AMP:	
C: MUST CREATE PAGE OF TEXT BEFORE E)NTER COORDINATES.		
N:		
SOURCE REF:	BEG END :	
PROC NAME: MENU DEMO	PROC TYPE:	
RECORD OPTIONS R)revise C)opy A)dd N)ext P)revious D)delete I)gnore		
L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit		

Figure 19

Record Options

There are several record options shown above in Figure 19. The R)revise option allows the user to change any field of the current record. The C)opy will produce a copy of the current record. This is very useful when there is a lot of information common to two records. The record number must be changed after the copy since duplicate record numbers are not allowed. The N)ext option sends the user to the next higher numbered record. The P)revious option sends the user back to the first record numbered lower than the current record. The D)delete option will delete the current record. The user is prompted to insure that records are not deleted accidentally. The I)gnore option throws away all changes which have been made to the current record during the current session. The L)ook option allows the user to see the screen as the end-user will see it. The G)et Amps option allows the user to obtain prompts for amplifications which are necessary for some of the program function fields. The V)ideo option allows the courseware developer to view

frames from a video disc (Play, Slow, Fast Forward, etc). The F)ile option allows the user to create a Page of Text file. The Q)uit option allows the user specify a new record to edit or exit.

Review the completed fields of record number 10 shown in Figure 19. The record id field should be 10. There should be entries in both device fields. There should be two entries under the FORWARD field consisting of 11 digits with a "/" after the first three digits. Check the PF1, PF2 and PF2 AMP fields. The other completed fields are for documentation purposes and do not affect the execution of the program. Changing a record requires that the user select R from the record options menu.

Make any necessary changes now and return to the record options menu.

Adding Records

Creation of the records 100, 110 and 200 is straight forward. Usually when a program part for a menu option is complete the courseware developer will want to send the end-user back to the menu. This is done by placing the number of the menu record in the last record of the records comprising that option. If the courseware has several menus, then the courseware developer will send the end-user to the desired menu by placing the record number of that menu in the last record of the menu option.

Perform the following actions now to create record 100.

1. *Press F1 key to get record options if not already present.*
2. *Select A)dd to create a new record.*
3. *Type 100<Enter> to change the record number from 20 to 100.*
4. *Type 110 in the FORWARD field.*
5. *Type KB<Enter> in the Device 2 field.*
6. *Type PT<Enter> in the PF1 field.*
7. *Press F1 key.*
8. *Select F)ile option.*
9. *Press F1 key.*
10. *Select C)opy option.*
11. *Type 10<Enter> in response to prompt.*
12. *Modify the Page of Text so that it resembles Figure 20.*
13. *Press F1 key.*
14. *Type S to save modified Page of Text file.*

The Page of Text was copied from record 10 because we did not want to recreate the boxes at the bottom of the page. In order to copy, you must start the exit process from the Page of Text editor. C)opy will be one of the options. Follow the prompts. After the copy is complete, the Page of Text editor is used to modify the copied text. Simulated screens for Page of Text Files #100 and #110 are shown below as Figures 20-21.

Dummy Record 1: Forward Field = Dummy Record 2

Back Up	Last Dec	Acc Opt	Forward
---------	----------	---------	---------

Figure 20

Dummy Record 2: Forward Field = Menu

Back Up	Last Dec	Acc Opt	Forward
---------	----------	---------	---------

Figure 21

Completed records 100, 110 and 200 are shown below as Figures 22-24.
Note that you must also create a Page of Text for record 100 and record 110.

Perform the following actions now:

1. Create record 110 by mimicking the instructions for creating record 100 and using Figure 21 above and Figure 23 below.
2. Use Figure 24 below to create record 200.

STAGE-III AUTHORIZING		DATE
RECORD ID:	100	SG:
FRAME 1:	0	FRAME 2:
PRE MASTER SMPTE 1:	00:00:00:00	PRE MASTER SMPTE 2:
FORWARD: 110		DEVICE 1: LP 2: KB
1:		5:
2:		6:
3:		7:
4:		8:
PF1: PT	PF1 AMP: #100/	40/80, 80
PF2:	PF2 AMP:	
PF3:	PF3 AMP:	
PF4:	PF4 AMP:	
C.		
N:		
SOURCE REF:		BEG END
PROC NAME: MENU DEMO		PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 22

STAGE-III AUTHORIZING

DATE 07/24/91

RECORD ID: 110 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 10 DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:

PF1: PT PF1 AMP: #110/ 40/80: 80
 PF2: PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C:
 N:

SOURCE REF:
 PROC NAME: MENU DEMO

BEG END :
 PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 23

STAGE-III AUTHORIZING

DATE 07/24/91

RECORD ID: 200 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: END DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:

PF1: PF1 AMP: 40/80 80
 PF2: PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C:
 N:

SOURCE REF:
 PROC NAME: MENU DEMO

BEG END :
 PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Figure 24

Exiting

After we complete the Stage III records, we return to the Stage III - Authorizing menu to set program-linked functions. To terminate the editing process, we need to bring up the record options menu by striking the F1 key. We enter Q)uit from the record options menu and this will return us to the menu shown in Figure 25 below.

Perform the following actions now:

1. *Press F1 key to obtain record options menu if necessary.*
2. *Type Q to select Q)uit option and return to screen shown in Figure 25 below.*
3. *Type 4<Enter> to set the Program-Linked Functions (Figure 26 below).*

EIDS ASSIST STAGE III - AUTHORIZING	DATE: 07/30/91
0. RETURN TO MAIN MENU 1. ADD RECORDS TO DATABASE 2. DISPLAY/EDIT/DUPLICATE RECORDS 3. PRINT REPORTS 4. SET PROGRAM - LINKED FUNCTIONS 5. ADJUST FRAME NUMBERS 6. LIST RECORD IDS 7. CREATE FRAME NUMBERS FROM PREMASTER SMPTE 8. PREVIEW STORYBOARDS	
SELECT OPTION :4	

Figure,25

Program Linked Functions

The program-linked functions we desire are Backup, Menu, Last Decision. The sound cues give a different beep depending upon whether the end-user has touched an active area or inactive area. The beep for a correct response is also different from the beep for an incorrect response. If the end-user touches the active area for access-option, (the rectangular area: $45 \leq \text{column} \leq 55$ and $21 \leq \text{row} \leq 25$), then the GENIE program displays a screen showing all the program-linked functions. The initial screen is shown in Figure 26 below.

PROGRAM-LINKED OPTIONS	
PLACE AN 'X' BESIDE THE OPTIONS YOU DESIRE:	
BACKUP (BK)	LAST DECISION (LD)
MENU (MU)	EXIT (EX)
PLACEMARK (PM)	MARGINAL NOTES (MN)
DEFICIENCY RPTG (DR)	SUSPEND (SU)
TRACE (TR)	SOUND CUES (SC)
DEBUG (DB)	SINGLE KEY (SK)
PLACE THE RECORD NUMBER BESIDE THE DESIGNERS CHOICE (DC) FUNCTION:	
DISC USE (DU): 0	FUNC KEY 1: 0 FUNC KEY 2: 0
INDICATE MODE OF OPERATION: 1	
1. INTERACTIVE VIDEO DISC (IVD) 2. COMPUTER AIDED INSTRUCTION (CAI)	
INDICATE MASTER-SLAVE SET-UP: 0	
0. MASTER w/ZERO SLAVES	2. MASTER w/TWO SLAVES 4. SLAVE
1. MASTER w/ONE SLAVE	3. MASTER w/THREE SLAVES
ENTER NAME OF DATA BASE:	

F1 Record Options

English

Figure 26

Perform the following actions now:

1. *Press the F1 key and type R to make changes to the Program-Linked Options menu .*
2. *Make the changes to the Program-Linked Options menu as shown below in Figure 27.*
3. *Press the F1 key and type Q to exit the Program-Linked Options menu.*

PROGRAM-LINKED OPTIONS		
PLACE AN 'X' BESIDE THE OPTIONS YOU DESIRE:		
BACKUP (BK)	X	LAST DECISION (LD) X
MENU (MU)	X	EXIT (EX) X
PLACE MARK (PM)	X	MARGINAL NOTES (MN)X
DEFICIENCY RPTG (DR)X		SUSPEND (SU) X
TRACE (TR)		SOUND CUES (SC) X
DEBUG (DB)		SINGLE KEY (SK)
PLACE THE RECORD NUMBER BESIDE THE DESIGNERS CHOICE (DC) FUNCTION:		
DISC USE (DU):	0	FUNC KEY 1: 0 FUNC KEY 2: 0
INDICATE MODE OF OPERATION: 1		
1. INTERACTIVE VIDEO DISC (IVD) 2. COMPUTER AIDED INSTRUCTION (CAI)		
INDICATE MASTER-SLAVE SET-UP: 0		
0. MASTER w/ZERO SLAVES	2. MASTER w/TWO SLAVES	4. SLAVE
1. MASTER w/ONE SLAVE	3. MASTER w/THREE SLAVES	
ENTER NAME OF DATA BASE:		

R)evise Q)uit Q

Figure 27

Conversion

After we complete the Program-Linked functions, we return to the main menu to convert the Stage III records we created into a form which can be interpreted by GENIE. Several more enters will get you back to the main menu.

While you are backtracking, one of the screens will ask for a subdirectory. Ignore this and hit enter instead. If you hit the enter key too many times you may completely exit the EIDS ASSIST program. If this happens, enter \autoexec and hit enter. The backslash (\) key is different from the forward slash (/). This should get you back to the screen shown below as Figure 28.

Perform the following actions now:

1. Repeat <Enter> until main menu is obtained (only menu with an Exit To The Operating System as an option). Ignore the prompt which asks for the directory again by pressing <Enter>.
2. Type 6<Enter> to initiate the conversion process.

The ASSIST menus required to complete the conversion are shown below.

EIDS ASSIST PROGRAM MENU		VERSION 2.2.1 NOVEMBER 1989
1. DESIGN	- DESIGN GENERATOR	
2. DOS UTILITIES	- VARIOUS DOS UTILITIES	
3. STORYBOARDS	- STAGE I, II, III, SHOT/EDIT LISTS	
4. UTILITIES	- VARIOUS UTILITIES	
5. GENIE	- GENERIC DRIVER SOFTWARE	
6. CONVERSION	- CREATE INTERACTIVE DATA	
7. MAKE GENIE DISK	- CREATE GENIE FLOPPY DISK	
8. MAKE CHI DISK	- CREATE INSTRUCTOR'S CHI DISK	
9. CONFIGURATION	- CONFIGURE SOFTWARE TO MATCH HARDWARE	
A. INTERACTIVE DISK	- CREATE INTERACTIVE DISK	
0. EXIT	- EXIT TO THE OPERATING SYSTEM	
SELECT OPTION: 6		

Figure 28

Sometimes the courseware developer will want to convert their Stage III records before the courseware program is complete. In that case, you will want to ignore references to non-existent records. Specify P for the error messages. Once you specify the subdirectory for your Stage III data records, the EIDS ASSIST program will automatically enter this same subdirectory as the directory for your output files. Hit enter to accept this subdirectory for output files and the conversion will start. It does not matter whether your entries are typed all caps, all lower case or mixed.

EIDS ASSIST CONVERSION SOFTWARE Copyright (C) 1987, Computer Sciences Corp.	
Do you wish to ignore references to non-existent records ?	.N:
Output error messages to printer (P) or text file (F) ?	:P:
Which subdirectory contains your stage III data files ?	
:MENUDEMO	:
Which subdirectory would you like the output files written ?	
:MENUDEMO<Enter>	:

Figure 29

Perform the following action now: type the entries shown in Figure 29.

If the screen shown in Figure 30 is not seen, then there was something wrong with the information given in Figure 29 above. At times, the EIDS ASSIST program will report errors and clear the screen almost simultaneously. Users who can not read the screen in less than a few milliseconds have no idea what the error may have been. Repeat the process.

EIDS ASSIST CONVERSION SOFTWARE NOVEMBER 1989		4 Records	
Page Of Text File	Completed.		
Fill-in-the-Blank File	:	None.	
Frame-Branch File	:	None.	
Incremental Build File	:	None.	
Random Assignment File (with or without Strikeout)	:	None.	
Variable Counter File	:	None.	
Record ID	:	100	Record 2 of 4
*** CONVERSION IN PROGRESS ***			

Figure 30

EIDS ASSIST CONVERSION SOFTWARE NOVEMBER 1989
<p>No Errors have occurred during Conversion</p> <p>Press <J> to return to the Main Menu</p>
*** Conversion is finished. ***

Figure 31

The screen in Figure 31 appears in the unlikely event that there were no errors on your first attempt. Most of us will see the screen shown in Figure 32 below.

If there were no conversion errors, then perform the following actions now:

1. Press <Enter> to return to Main Menu.
2. Skip the procedures below for correcting conversion errors.

EIDS ASSIST CONVERSION SOFTWARE NOVEMBER 1989
<p>Errors have occurred during Conversion</p> <p>Correct the errors in your Stage III file and try again.</p> <p>Press <J> to return to the Main Menu</p>
*** Conversion is finished. ***

Figure 32

If there are errors, the screen in Figure 32 is displayed. To correct conversion errors, we must return to the screen shown in Figure 5 above. Select option 2 (DISPLAY/EDIT/DUPLICATE RECORDS) from the menu shown in Figure 5 above. The next menu is shown below as Figure 33. Select option 1 (RECORD ID) from the menu in Figure 33. We will assume that there is an error in storyboard record number 110.

If there were conversion errors, perform the following actions now:

1. Press <Enter> to regain the main program menu.
2. Type 3<Enter> to select Storyboards from main menu.
3. Type menudemo<Enter> to specify directory.
4. Type 3<Enter> to select Stage III - Authoring.
5. Type 2<Enter> to select Display/Edit/Duplicate Records option and obtain the screen seen in Figure 33.
6. Type 1<Enter> to obtain the screen in Figure 34.
7. Type 110<Enter> (or record number for first record which has an error) to reenter the Stage III Storyboard Editor.
8. Revise Storyboard record 110.
9. Press F1 to obtain record options.
10. Select Q)uit to exit revision of record 110.
11. Type record number of next record with an error or press <Enter> if there are no more errors.

EIDS ASSIST DATE: 08/22/91 STAGE III - AUTHORIZING
INDICATE SEARCH CRITERIA 0. RETURN TO STAGE III - MENU 1. RECORD ID 2. BEGINNING FRAME NUMBER 3. BEGINNING PREMASTER SMPTE NUMBER 4. PROGRAMMING FUNCTIONS 5. COMMENTS
SELECT OPTION :1

Figure 33

Enter Starting RECORD ID <1> or Press <1> to Return to Menu or Type FIRST <1> for FIRST Record: 110

Figure 34

We have shown part of the next screen as Figure 34 above. Our next screen will be storyboard record number 110. We may now modify any field of storyboard record 110. Storyboard records may also be deleted at this time. During the initial creation stage records may be added only. To delete records, the courseware designer must exit from this "add" mode and reenter the Stage III Storyboard Editor using option 2 from the menu in Figure 5. The courseware designer can now add, delete or revise storyboard records.

Execution

When all conversions errors have been corrected, we may execute our courseware program. To run this demonstration, exit ASSIST and type the DOS commands (2-4 below) in exactly the order they are listed:

1. Type 0<Enter> to exit ASSIST.
2. COPY GENIE.CFG MENUDEMO<Enter>
3. CD MENUDEMO<Enter>
4. GENIE<Enter>

Appendix B

Video Graphics Example

Imported Graphics

It is assumed that the user has run the Menudemo program and has access to the EIDS ASSIST Manual Version 2.2.

This program will illustrate graphics imported from paintbrush (running under MicroSoft Windows 3.0). The graphics will be shown over video and the graphics will be shown over Page of Text files. This program will also illustrate the Designers Choice Program-Linked options DU (Disk Use), F1 key and F2 key (EIDS ASSIST Manual, Version 2, IV-15-12 through IV-15-15). This program also illustrates text displayed over video and the use of subroutines.

Graphical images were created in paintbrush and saved in files: forward.pcx, backward.pcx, accopts.pcx, and lastdec.pcx. The files were renamed with the same prefix but the suffix was changed to epc to conform to EIDS ASSIST requirements. For example, forward.pcx was renamed forward.epc.

Normal VGA (Hi mode) graphics screens are 640 by 480 pixels. The EIDS hardware will display a resolution of 640 by 350 pixels. This means that the lower 27 percent of the graphical image is lost. MicroSoft calls a pixel a pel (picture element). It is a single dot on the screen and the number of colors may be 4, 16, 256 or higher depending upon the equipment. EIDS documentation indicates that 16 colors can be displayed. It usually takes at least one-half byte of computer storage to store a pixel. It follows that a graphical image which is 640 by 350 pixels would take at least 112,000 bytes of storage. To get a feel for the size of a pixel, the normal screen character is 8 pixels wide and about 16 pixels high.

The graphical images found in files accopts.epc, backward.epc, forward.epc, and lastdec.pcx are all 48 by 48 pixels and require approximately 700 bytes of storage. The graphical images leftyel.epc and rightyel.epc supplied with EIDS ASSIST package are 64 x 22 pixels and 72 x 25 pixels respectively. The graphical image, graphex.epc, shown over video in the demonstration is 320 x 90 pixels and requires about 7,500 bytes of storage. The graphical images for Backward, Lastdec, Accopt and Forward are imported into Word Perfect and shown below at the size they would be seen when displayed on the screen. Naturally, the color is lost.

BACK
<<<<<<
WARD

LAST
DEC

ACCESS
OPTS

FOR
>>>>>>
WARD

The graphic, graphex.epc, was created using MicroSoft Paint running under MicroSoft Windows 3.0. The image attributes were set to 320 x 90 pel (pixels) using the options menu. The graphical image was saved as a pcx file and renamed graphex.epc at the MS-DOS prompt using MS-DOS command:

>RENAME GRAPHEX.PCX GRAPHEX.EPC

Subroutines

Subroutines are explained very well in the EIDS ASSIST manual in Chapter VII. The concept of a subroutine is the most important in program development. In programming languages, subroutines are separate nameable entities which can be "called" several times. Each time a program calls a subroutine and the execution of the subroutine is completed, then execution of the program continues at the first statement following the statement which called the subroutine. This program contains three subroutines:

1. Disc Use Demo Subroutine (Storyboard Record Ids. 901000 - 901300)
2. F1 Key Demo Subroutine (Storyboard Record Ids. 900000 - 900300)
3. F2 Key Demo Subroutine (Storyboard Record Ids. 902000 - 902300)

The "main program" consists of a sequence of Stage III Storyboard records which produce a few screens but primarily call the three subroutines. The main program is comprised of Storyboard Record Ids. 100 - 500.

Designers Choice Functions

Designer's Choice Function allow the end-user to interrupt the normal flow of the program to receive special information or help. Designers Choice Functions are implemented using subroutines because the end-user must return to the program. There are several other options available through program linked functions. These end-user may access these options any time the ACC OPTS box is displayed at the bottom (toward the right but not right most) of the screen. These options are shown in Screen 16. The boxes are colored bright red.

Program Screen Descriptions

Screens 1-15 show one path through the program. The screens will look completely different when the program is executed because the colors have been lost and much of the text seen is enclosed in colored boxes. Screen 1 seen below is an introductory screen which tells the end-user what the program does. The primary input device is the lightpen and the secondary input device is the keyboard. If the keyboard is used, the right arrow substitutes for touch Forward.

Screen 2 is seen immediately after Screen 1 if the end-user touches Forward on Screen 1 with the lightpen. Screen 3 is seen immediately after Screen 2 if the end-user touches Forward on Screen 2.

This EIDS/ASSIST Program Demonstrates the Use of

1. The Three Designer Choice Functions
 - A. DU (Disk Use)
 - B. F1 Function Key
 - C. F2 Function Key
2. The Knob Turn simulation for the Video Disc (KB Program Function)
3. The Interrupt Motion for the Video Disc (IM Program Function)
4. Graphics shown over Video
5. Text Shown over Video

Touch Forward with your light pen to begin the demonstration

Forward

Screen 1

Touch Forward to Begin Disc Use Demonstration

For
>>>>
Ward

Screen 2

Screen 3 is produced by the Disc Use Demo Subroutine and introduces the Disc Use Designers Choice Function. Screen 4 was not captured. Screen 4 is shown when the end-user touches Forward on Screen 3. At this time the program

will play a video sequence with graphics displayed over video. The end-user may terminate the video sequence at any time by touching any location on the screen with the lightpen.

Illustration of the Designers Choice (DC) Function

Disc Use (DU)

The Disc Use function is intended to give the end-user any necessary instructions for using the interactive video courseware. The end-user is able to access this function at any time by touching the Access Options area of the screen and then touching the Disc Use area. The video motion sequence shown may be interrupted by the end-user at any time by touching the screen anywhere. The motion sequence will terminate abruptly mid-sentence. Note the graphics shown over the video

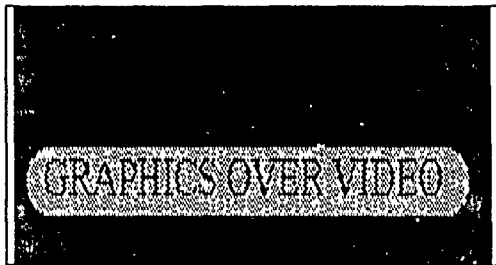
Touch Forward With the Lightpen to Continue

ACC OPTS

FORWARD

Screen 3

Video is shown on this screen. The screen capture program will not capture the video or graphics screens. When the courseware demonstration program is executed, the video will play a sequence of frames (about 3000 frames) and graphics will be shown over the video in the lower right hand corner. The graphics has been imported into this document. The reproduction is not very good.



Screen 4

Upon exit from the Disc Use Demo Subroutine, Screen 5 is produced by the main program. Screen 6 is obtained by touching Forward on Screen 5 with the lightpen.

Touch Forward
for F1 Key Demo

For
>>>>
Ward

Screen 5

Illustration of the Designers Choice (DC) Function
for Func Key 1 (F1 Key)

Touch Forward With the Lightpen to Continue

FORWARD

Screen 6

Screen 6 above is produced by the F1 Key Demo Subroutine. Screen 7 is obtained by touching Forward on Screen 6 with the lightpen. Screen 7 gives a menu for the end-user to select from. Screen 8 is seen next by touching "Tell Me More" on Screen 7. Screens 8 - 11 below are produced if the end-user selects the tell me more option. The information given in those screens is taken from Table 8-3 of the manual. Screens 9-14 are obtained by touching Forward on the previous screen with the lightpen. Upon exit from the F1 Key Demo Subroutine, Screen 12 is produced by the main program.

Active Area Help Menu

Tell Me More About
Active Areas
1

Use lightpen to touch
desired option

Exit
(I already know
about active
areas)
2

Enter 1 or 2 to select
option if using
keyboard

Back UP

Last Dec

Access
Options

Forward

Screen 7

Active areas

There are several active areas on your screen. These areas are alive whether they are labelled or not. Four important active areas appear at the bottom of your screen. Those areas are highlighted below in red boxes and labelled. To see the additional areas which are active touch the Access Options box with your lightpen. Touch the Acc Opts box on the screen which appears to obtain this screen again.

The boxes below also give the location to the active area. Any time the corresponding area on your screen is black, then that option is inactive. This is because the lightpen can not read a black area. The lighter the area the easier the lightpen can read the area.

Touch Forward to Continue

Back UP
Cols 5-15
Rows 21-25

Last Dec
Cols 25-35
Rows 21-25

Acc Opts
Cols 45-55
Rows 21-25

Forward
Cols 65-75
Rows 21-25

Screen 8

Active Area Glossary of Terms

Forward End-user can move to next frame or screen.

BackUp End-user can move back one frame or screen.

Last Dec End-user can move back to the last decision point such as a menu.

Menu End-user can move back to the last menu viewed.

Suspend End-user can temporarily leave the program and return later to the same location.

PlaceMark The end-user can mark screen and return to that screen by accessing the access options.

Touch Forward to Continue

ACC OPTS

FORWARD

Screen 9

Glossary of Active Area Terms (Continued)

Exit End-user can exit the program at any time.

Disc Use End-user can access frames which explain conventions for using options in the interactive program. This may be accessed any time the end user can obtain the Program Linked Options screen.

Marginal Notes End-user can make notes regarding a particular record and access the notes from that record later.

Deficiency Reporting End-user can report errors.

Touch Forward to Continue

ACC OPTS

FORWARD

Screen 10

Glossary of Active Area Terms (Continued)

F1, F2 End-user can access a frame or series of records at any time during the program.
Designers
Choice

Print Screen If a printer is attached, the end-user may print a text screen.

Touch Forward to Continue

ACC OPTS

FORWARD
(EXIT
F1 HELP)

Screen 11

Touch Forward to begin F2 Key Demonstration

For
>>>>>
Ward

Screen 12

Screen 13 is produced by the F2 Key Demo Subroutine. Screen 14 is a video screen which has graphics shown over the video and has text shown over the video. Upon exit from the F2 Key Demo Subroutine, the main program produces Screen 14.

Screen 14 is a menu which gives the end-user the options of (1) exiting the program, (2) repeating the entire program, (3) repeating the Disc Use Demo Subroutine only, (4) repeating the F1 Key Demo only and (5) repeating the F2 Key Demo only.

Illustration of the Designers Choice (DC) Function

for Func Key 2 (F2 Key)

This example shows the simulated knob turn (KB) program function for the video disc. The right arrow will step the video forward to the next frame. The left arrow will step the video backward one frame. To exit the example, step the video forward 25 or 30 frames or touch the exit box which will appear in the lower right hand corner. It may take several frames for picture to change!!!

Touch Forward With the Lightpen to Continue

ACC OPTS

FORWARD

Screen 13

The screen capture program would not capture this screen either. This screen consists of two graphical images: a yellow left arrow, a yellow right arrow. This screen has video overlaid by graphics and video overlaid by text. There is text in the lower right hand corner indicating the end-user must touch that area to exit the F2 key demonstration. The end-user is able to advance the video disc about a total of 20 or 30 frames by touching the yellow right arrow. For each frame the end-user has stepped forward, the end-user may step the video backward one frame by touching the yellow left arrow.

Screen 14

This Completes the Demonstration

Touch This Box to Return to DOS

Touch This Box to Repeat Entire Demo

Touch This Box to Repeat DU Function

Touch This Box to Repeat F1 Key Demo

Touch This Box to Repeat F2 Key Demo

Screen 15

EXIT	DISC USE	SUSP	MENU
HARG NOTES		PLMK	F1
DEFIC REPORT		PRINT SCREEN	F2
BACKUP	LAST DECIS	ACCESS OPTNS	

Screen 16

Screen 16 may be obtained by the end-user anytime the "ACC OPTS" box is present at the bottom of the screen. The options seen on this screen are set in the program linked functions.

Program Storyboards

Storyboard Record No. 1 is a menu record which shows that two different responses may yield the same branch. In Screen 1, the instructions are:

"Touch Forward to Continue". The lower right hand corner a red colored box encloses the word "Forward". The text for "Forward" appears twice on this screen. Storyboard Record No. 2 is executed next no matter which of the "Forward"s the end-user touches.

STORYBOARD RECORD NO. 1 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 100 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: DEVICE 1: LP 2: KB
 1: 110/15192119 5:
 2: 110/64217423 6:
 3: 7:
 4: 8:

PF1: PT PF1 AMP: #100/ 40/80: 80
 PF2: MJ PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C: ERROR 201 IS A TURBO PASCAL RUNTIME ERROR. CONTACT ...
 N:

SOURCE REF: BEG END :
 PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)revise C)copy A)dd N)ext P)revious D)lete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 2 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 110 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 115 DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:

PF1: CT PF1 AMP: 3212YH/00007924TE 40/80: 80
 PF2: GI PF2 AMP: FORWARD/6420
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C: DISC USE FUNCTION ILLUSTRATION / GRAPHICS OVER VIDEO
 N: Touch Forward/for Disc Use Demo

SOURCE REF: BEG END :
 PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)revise C)copy A)dd N)ext P)revious D)lete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

Storyboard Record No. 1 produces Screen 1 above. Storyboard Record No. 2 produces Screen 2 above.

Storyboard Record No. 3 "calls" the Disc Use Demo Subroutine. This is accomplished by the LS program function. The first record of the subroutine

and return record is specified using the format NNNNNN/MMMMMM. NNNNNN is the first record id of the subroutine and MMMMMM is the record id to be executed when a resume record is encountered. In programming language theory, the record id MMMMMM would be called a "return address". In this sense, Storyboard Record id 120 would be the "return address". A resume record terminates the execution of a subroutine. Storyboard Record id 901000 (listed as STORYBOARD RECORD NO. 20 below) is specified as the first record id of the Disc Use Demo Subroutine. The resume record for this subroutine is Storyboard record id 901300 (STORYBOARD RECORD NO. 22). A resume record is created by placing R in the BEG END field. A resume record has a record id and may have comments in the comment field and the R in the BEG END field mentioned above, but all other fields should be left blank. Storyboard Record No. 3 does not produce a screen.

STORYBOARD RECORD NO. 3		STAGE-III AUTHORIZING	DATE 08/08/91
RECORD ID:	115	SG:	
FRAME 1:	0	FRAME 2:	0
PRE MASTER SMPTE 1:	00:00:00:00	PRE MASTER SMPTE 2:	00:00:00:00
FORWARD: 901000/R120		DEVICE 1: LP 2: KB	
1:		5:	
2:		6:	
3:		7:	
4:		8:	
PF1: LS	PF1 AMP:	40/80: 80	
PF2:	PF2 AMP:		
PF3:	PF3 AMP:		
PF4:	PF4 AMP:		
C: DISC USE FUNCTION.			
N:			
SOURCE REF: CH 7 & IV-9-25		BEG END :	
PROC NAME: MAIN PROGRAM		PROC TYPE:	
RECORD OPTIONS R)revise C)copy A)add N)ext P)previous D)delete I)gnore			
L)ook E)nter Coords G)et Amps V)ideo Q)uit			

Storyboard Record No. 4 is executed when the Disc Use Demo Subroutine has been completed. Storyboard Record No. 5 "calls" the F1 Key Demo Subroutine (Storyboard Record ids 900000 - 900300). The "return address" is Storyboard Record No. 6 (Storyboard Record id 130). A pattern should be detected by now.

Storyboard Record No. 4 below produces Screen 5 above. Storyboard Record No. 5 does not produce a screen.

STORYBOARD RECORD NO. 4 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 120 SG:
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 125 DEVICE 1: LP 2. KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: CT PF1 AMP: 3212YW/00007924TE 40/80: 80
PF2: GI PF2 AMP: FORWARD/6420
PF3: PF3 AMP:
PF4: PF4 AMP:

C: F1 KEY /ACTIVE AREAS
N: Touch Forward\For F1 Key Demo

SOURCE REF: BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

STORYBOARD RECORD NO. 5 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 125 SG:
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 900000/R130 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: LS PF1 AMP: 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: F1 KEY /ACTIVE AREAS
N:

SOURCE REF: CM 7 & IV-9-25 BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

Storyboard Record No. 6 is executed when the F1 Key Demo Subroutine has been completed. Storyboard Record No. 6 below produces Screen 12 above. Storyboard Record No. 7 "calls" the F2 Key Demo Subroutine (Storyboard Record ids 902000 - 902300). The "return address" is Storyboard Record No. 8. Storyboard Record No. 7 does not produce a screen.

STORYBOARD RECORD NO. 6 STAGE-III AUTHORIZING DATE 02/03/91

RECORD ID: 130 SG: FRAME 2: 0
FRAME 1: 0 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 135 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: CT PF1 AMP: 321LM/00007924TE 40/80: 80
PF2: GI PF2 AMP: FORWARD/6420
PF3: PF3 AMP:
PF4: PF4 AMP:

C: F2 KEY /ACTIVE AREAS
N: Touch Forward(For F2 Key Demo

SOURCE REF: BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)delete I)gnore
L)ook E)nter Coords G)et Amps V)ideo Q)uit

STORYBOARD RECORD NO. 7 STAGE-III AUTHORIZING DATE 03/08/91

RECORD ID: 135 SG: FRAME 2: 0
FRAME 1: 0 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 902000/R140 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: LS PF1 AMP: 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: F2 KEY /ACTIVE AREAS
N:

SOURCE REF: CH 7 & IV-9-25 BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)delete I)gnore
L)ook E)nter Coords G)et Amps V)ideo Q)uit

Storyboard Record No. 8 is somewhat complicated. This is menu record which allows the end-user to select from five different options. The first option allows the end-user to return to DOS (exit the program). The second option allows the end-user to repeat the entire program. This is done by branching to Storyboard Record No. 1.

The third option allows the end-user to repeat the Disc Use Demo Subroutine and return to this menu record. This is accomplished by branching to Storyboard Record No. 9 (Storyboard Record id 150). This record "calls" the Disc Demo Subroutine and specifies Storyboard Record No. 8 as the "return

address". This has the effect of executing the Disc Use Demo Subroutine and returning to the menu record (Storyboard Record No. 8).

The fourth and fifth options allow the end-user to repeat the F1 Key Demo Subroutine and F2 Key Demo, and return to the menu record. This is implemented in a manner similar to the third option.

STORYBOARD RECORD NO. 8 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 140 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: DEVICE 1: LP 2: KB
 1: 500/22045606 5: 170/22205722
 2: 100/22085710 6:
 3: 150/22125714 7:
 4: 160/22165718 8:

PF1: PT PF1 AMP: #140/ 40/80: 80
 PF2: MJ PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C:
 N:

SOURCE REF: BEG END :
 PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)revise C)copy A)dd N)ext P)revious D)delete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

Storyboard Record No. 8 above produces Screen 15 above. Storyboard Record Nos. 9-11 complete menu options three, four and five respectively. Storyboard Record No. 12 completes option 1. Storyboard Record Nos. 9-12 produce no screens.

STORYBOARD RECORD NO. 9 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 150 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 901009/R140 DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:

PF1: LS PF1 AMP: 40/80: 80
 PF2: PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C: REPEAT DU FUNCTION
 N:

SOURCE REF: CH 7 & IV-9-25 BEG END :
 PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)revise C)copy A)dd N)ext P)revious D)delete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

STORYBOARD RECORD NO. 10 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 160 SG: FRAME 2: 0
FRAME 1: 0 PRE MASTER SMPTE 2: 00:00:00:00
PRE MASTER SMPTE 1: 00:00:00:00

FORWARD: 900000/R140 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: LS PF1 AMP: 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: CH 7 & IV-9-25 BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)revise C)opy A)dd N)ext P)revious D)elete I)gnore
L)ook E)nter Coords G)et Amps V)ideo Q)uit

STORYBOARD RECORD NO. 11 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 170 SG: FRAME 2: 0
FRAME 1: 0 PRE MASTER SMPTE 2: 00:00:00:00
PRE MASTER SMPTE 1: 00:00:00:00

FORWARD: 902000/R140 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: LS PF1 AMP: 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: CH 7 & IV-9-25 BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

RECORD OPTIONS R)revise C)opy A)dd N)ext P)revious D)elete I)gnore
L)ook E)nter Coords G)et Amps V)ideo Q)uit

STORYBOARD RECORD NO. 12 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 500 SG: FRAME 2: 0
FRAME 1: 0 PRE MASTER SMPTE 2: 00:00:00:00
PRE MASTER SMPTE 1: 00:00:00:00

FORWARD: END DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: PF1 AMP: 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: END GRAPHICS DEMONSTRATION PROGRAM
N:

SOURCE REF: IV-15-16 BEG END :
PROC NAME: MAIN PROGRAM PROC TYPE:

F1 - Record Options F9 - General Help F10 - Specific Help English

Storyboard Record Nos. 13-18 below produced Screens 6-11 above.
Storyboard Record Nos. 13-19 constitute the F1 Key Demo subroutine.

STORYBOARD RECORD NO. 13 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 900000 SG: FRAME 2: 0
FRAME 1: 0 PRE MASTER SMPTE 2: 00:00:00:00
PRE MASTER SMPTE 1: 00 00:00:00

FORWARD: 900100 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: PT PF1 AMP: #900000/ 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C: EXPLAIN ACTIVE AREAS AND F1 KEY
N:

SOURCE REF: BEG END :
PROC NAME: F1 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 14 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 900100 SG: 0
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00-00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: DEVICE 1: LP 2: KB
1: 900200/29044907 5:
2: 900300/29104915 6:
3: 7:
4: 8:

PF1: MU PF1 AMP: 40/80: 80
PF2: PT PF2 AMP: #900100
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: BEG END :
PROC NAME: F1 KEY, DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 15 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 900200 SG: 0
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00 00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 900210 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: PT PF1 AMP: #900200/ 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: BEG END :
PROC NAME: F1 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords C)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 16 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 900210 SG: 0
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 900220 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: PT PF1 AMP: #900210/ 40/80. 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: BEG END :
PROC NAME: F1 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 17 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 900220 SG: 0
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00 00:00:00

FORWARD: 900230 DEVICE 1: LP 2. KB
1: 5.
2: 6.
3: 7.
4: 8.

PF1: PT PF1 AMP: #900220/ 40/80. 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: BEG END :
PROC NAME: F1 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 18

STAGE-III AUTHORIZING

DATE 08/08/91

RECORD ID: 900230 SG: 0
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 900300 DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:

PF1: PT PF1 AMP: #900230/ 40/80: 80
 PF2: PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C:
 N:

SOURCE REF: BEG END :
 PROC NAME: F1 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elele I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 19

STAGE-III AUTHORIZING

DATE 08/08/91

RECORD ID: 900300 SG: 0
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:

PF1: PF1 AMP: 40/80: 80
 PF2: PF2 AMP:
 PF3: PF3 AMP:
 PF4: PF4 AMP:

C: RETURN FROM SUBROUTINE DUMMY RECORD
 N:

SOURCE REF: BEG END : R
 PROC NAME: F1 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elele I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

In the Disc Use Demo Subroutine, Storyboard Record No. 22 is interesting. The graphical image is shown over video because G1 (graphical image program function) is placed in the PF2 field rather than the PF1 field. The Video is shown, then the graphical image is displayed. If G1 had been placed in the PF1 field and IM (interrupt motion program function) in the PF2 field, then the graphical image would have been covered by the video. The IM program function allows the end-user to interrupt the video at any time. But the courseware designer can determine which record is executed next depending upon the video frame number at the time the video was interrupted. In our

example, we sent the end-user to Storyboard Record No. 22 no matter what the frame number was at the time the end-user interrupted the video. However, several different branches could have been made. See Section IV, Chapter IX, pages 20-22 of the manual. The branches may be entered in the file associated with record id 901100 given in the PF1 AMP field as the entry FILE/B. A screen image of this file is shown below to show the format.

RECORD ID: 901100	Frame1: 24500	Frame2: 27500
	RE-ENTER RECORD ON	
REF #	ENDING FRAME	BRANCH TO INTERRUPTED FRAME(Y/N)
1.	27500	901300 N

RECORD OPTIONS

A)dd D)delete R)evise H)ardcopy S)ave and Return

Storyboard Record No. 20 below produced Screen 3 above. Note that the subroutine for F1 Key Demo appeared before the subroutine for Disc Use Demo even though the Disc Use Subroutine is executed by the Main Program first.

STORYBOARD RECORD NO. 20	STAGE-III AUTHORIZING	DATE 08/08/91
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RECORD ID: 901000	SG:	
FRAME 1: 0	FRAME 2: 0	
PRE MASTER SMPTE 1: 00:00:00 00	PRE MASTER SMPTE 2: 00:00:00:00	
FORWARD: 901100	DEVICE 1: LP 2: KB	
1:	5:	
2:	6:	
3:	7:	
4:	8:	
PF1: PT	PF1 AMP: #901000/	40/80: 80
PF2:	PF2 AMP:	
PF3:	PF3 AMP:	
PF4:	PF4 AMP:	

C. DISC USE FUNCTION ILLUSTRATION / GRAPHICS OVER VIDEO

N:

SOURCE REF:	BEG END :
PROC NAME: DISC USE DEMO SUBROUTINE	PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

Storyboard Record No. 21 below produced Screen 4 above. The frame numbers may be reset in Record 21 so that the entire videodisc is played. Storyboard Record No. 22 does not produce a screen.

STORYBOARD RECORD NO. 21 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 901100 SG:
FRAME 1: 24500 FRAME 2: 27500
PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00

FORWARD: 901300 DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: IM PF1 AMP: FILE/B 40/80: 80
PF2: GI PF2 AMP: GRAPHEX/4016
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: IV-9-20 BEG END :
PROC NAME: DISC USE DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)delete I)gnore
L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 22 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 901300 SG:
FRAME 1: 0 FRAME 2: 0
PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00 00:00:00

FORWARD: DEVICE 1: LP 2: KB
1: 5:
2: 6:
3: 7:
4: 8:

PF1: PF1 AMP: 40/80: 80
PF2: PF2 AMP:
PF3: PF3 AMP:
PF4: PF4 AMP:

C:
N:

SOURCE REF: III-7-3 BEG END : R
PROC NAME: DISC USE DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)delete I)gnore
L)ook E)nter Coords G)et Amps V)ideo Q)uit

In the F2 Key Demo Subroutine, Storyboard Record No. 24 is interesting. There are two graphical images shown over video and computer text is shown over video. Again, the graphical images must appear after the program function (KB) for the video image. Also, the computer text program function (CT) has to appear after the program function for the video. Since the graphical images and the text do not overlap, it really does not matter which order they appear in so long as it is after the video function.

Storyboard Record No. 23 below produced Screen 13 above. The screen produced by Storyboard Record No. 24 is described in Screen 14 above. Storyboard Record No. 25 does not produce a screen.

STORYBOARD RECORD NO. 23 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 902000 SG:
 FRAME 1: 0 FRAME 2: 0
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00:00
 FORWARD: 902200 DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:
 PF1: PT PF1 AMP: #902000/ 40/80: 80
 PF2: GI PF2 AMP: LEFTYEL/0012
 PF3: GI PF3 AMP: RIGHTYEL/6712
 PF4: PF4 AMP:

C: TEXT DISPLAYED OVER VIDEO AND F2 KEY EXAMPLE
 N:

SOURCE REF: BEG END :
 PROC NAME: F2 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)revise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo F)ile Q)uit

STORYBOARD RECORD NO. 24 STAGE-III AUTHORIZING DATE 08/08/91

RECORD ID: 902200 SG:
 FRAME 1: 604 FRAME 2: 630
 PRE MASTER SMPTE 1: 00:00:00:00 PRE MASTER SMPTE 2: 00:00:00 00
 FORWARD: 902300 DEVICE 1: LP 2: KB
 1: 5:
 2: 6:
 3: 7:
 4: 8:
 PF1: KB PF1 AMP: 604/00121216/67127916 40/80: 80
 PF2: GI PF2 AMP: LEFTYEL/0012
 PF3: GI PF3 AMP: RIGHTYEL/6712
 PF4: CT PF4 AMP: 6322WE/63227924RD

C: RIGHT ARROW -- STEP FORWARD\LEFT ARROW -- STEP BACKWARD
 N: Exit Knob Turn(Text Over Video)

SOURCE REF: IV-9-22 BEG END :
 PROC NAME: F2 KEY DEMO SUBROUTINE PROC TYPE:

RECORD OPTIONS R)revise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

STORYBOARD RECORD NO. 25

STAGE-III AUTHORIZING

DATE 08/08/91

RECORD ID: 902300

SG:

FRAME 1: 0

FRAME 2: 0

PRE MASTER SMPTE 1: 00:00:00:00

PRE MASTER SMPTE 2: 00:00:00:00

FORWARD:

DEVICE 1: LP 2: KB

1:

5:

2:

6:

3:

7:

4:

8:

PF1: PF1 AMP:

40/80: 80

PF2: PF2 AMP:

PF3: PF3 AMP:

PF4: PF4 AMP:

C: END OF F2 DEMONSTRATION AND KNOB TURN SIMULATION.

N:

SOURCE REF: III-7-3

BEG END : R

PROC NAME: F2 KEY DEMO SUBROUTINE

PROC TYPE:

RECORD OPTIONS R)evise C)opy A)dd N)ext P)revious D)elete I)gnore
 L)ook E)nter Coords G)et Amps V)ideo Q)uit

The screen image below shows the program linked options and how to associate a subroutine with the designer choice options.

PROGRAM-LINKED OPTIONS		
PLACE AN 'X' BESIDE THE OPTIONS YOU DESIRE:		
BACKUP (BK)	X	LAST DECISION (LD) X
MENU (MU)	X	EXIT (EX) X
PLACEMARK (PM)	X	MARGINAL NOTES (MN)X
DEFICIENCY RPTG (DR)X		SUSPEND (SU) X
TRACE (TR)		SOUND CUES (SC) X
DEBUG (DB)		SINGLE KEY (SK)
PLACE THE RECORD NUMBER BESIDE THE DESIGNERS CHOICE (DC) FUNCTION:		
DISC USE (DU): 901000	FUNC KEY 1: 900000	FUNC KEY 2: 902000
INDICATE MOOE OF OPERATION: 1		
1. INTERACTIVE VIDEO DISC (IVD) 2. COMPUTER AIDED INSTRUCTION (CAI)		
INDICATE MASTER-SLAVE SET-UP: 0		
0. MASTER w/ZERO SLAVES 2. MASTER w/TWO SLAVES 4. SLAVE		
1. MASTER w/ONE SLAVE 3. MASTER w/THREE SLAVES		
ENTER NAME OF DATA BASE:		

F1 - Record Options

English